might be employed in powder magazines, or for attracting fish, as the flask might be sealed up and lowered into the water. Under suitable conditions the phosphorescent properties of the cultures last for two to three weeks. It is to be noted that Mr. J. E. Barnard, of the Jenner Institute, some time ago similarly photographed cultures of phosphorescent bacteria, and that at a soirée of the Royal Society two years ago, Prof. Macfadyen and Mr. Barnard exhibited a fine series of cultures of phosphorescent micro-organisms.

THE new issue of the "Psychological Index, a Bibliography of the Literature of Psychology and Cognate Subjects for 1902," published in connection with the *Psychological Review*, has been compiled by Prof. H. C. Warren, of Princeton University, with the cooperation of M. J. Philippe and Dr. W. H. R. Rivers. It includes the titles of original publications in all languages, together with translations and new editions in English, French, and German.

THE third separate issue of the *Annuaire météorologique* is that for 1903, published by the Royal Observatory of Belgium under the supervision of M. A. Lancaster, the director of the Belgian meteorological service. Previous to 1900 there was a single annual publication devoted to astronomy and meteorology. M. Lancaster contributes to the present volume an elaborate article running to 130 pages on the force of the wind in Belgium; it contains an array of useful statistics and several interesting curves.

THE Geologists' Association has arranged an excursion to North Staffordshire for the Whitsuntide holidays. Stoke is to be made the centre from which geological excursions will take place. The members from London will leave Euston on Friday evening, May 29, and return on the following Wednesday evening. Notice should be sent to Mr. E. P. Ridley, Burwood, Ipswich, the excursion secretary, before May 15 by all who intend joining the excursion. An interesting programme of geological work has been arranged, and the daily visits should be enjoyable and instructive.

THE April number of the *Essex Naturalist*, the journal of the Essex Field Club, contains several sensible proposals for a photographic and pictorial survey of Essex, by Mr. A. E. Briscoe; an article on work in the field amongst the fungi, with additions to the flora of Epping Forest made at the fungus foray, 1902, by Dr. M. C. Cooke; and a paper by Messrs. A. S. Kennard and B. B. Woodward on the non-marine Mollusca of the River Lea alluvium at Walthamstow. The journal contains much other interesting material and a number of good illustrations.

MR. JOHN MURRAY has published a third edition of Mr. W. Robinson's "Alpine Flowers for Gardens. Rock, Wall, Marsh Plants, and Mountain Shrubs," which appeared first in 1870. The book has been revised, and should interest all lovers of horticulture in those plants which grow naturally on all high mountain-chains. Since the author states, in the prefatory note to this edition, that "there is not a garden, even in the suburbs of our great cities, in which the flowers of alpine lands might not be enjoyed," the addition of these mountain species to the garden plants usually cultivated in this country should greatly add to the interest of the amateur gardener's work.

THE additions to the Zoological Society's Gardens during the past week include a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, presented by Miss Ruby Ray; a Lesser Black-backed Gull (*Larus fuscus*) from Port Said, presented by Dixon Bey; a Capybara (*Hydrochoerus capybara*), a Brazilian Cariama (*Cariama cristata*), a Ypecaha Rail (*Aramides ypecaha*) from South America, presented by Colonel Sir T. H. Holdich, C.B.; a Yellow Baboon (*Papio cynocephalus*) from Africa, two Maholi Galagos (*Galago maholi*), a Leopard Tortoise (*Testudo pardalis*) from South Africa, an Indian Rat Snake (*Zamenis mucosus*), two Indian River Snakes (*Tropidonotus piscator*) from India, an Alligator Terrapin (*Chelydra serpentina*), two Alaska Geese (*Bernicla minima*) from North America, two Ross's Snow Geese (*Chen rossi*) from Antarctic America, three Lesueur's Water Lizards (*Physignathus lesueuri*), a Cunningham's Skink (*Egernia cunninghami*), a Gould's Monitor (*Varanus gouldi*), two Limbless Lizards (*Pygopus lepidopus*) from Australia, a Slender Loris (*Loris gracilis*) from Ceylon, two Large Greaved Tortoises (*Podocnemis expansa*) from the Amazons, three Starred Lizards (*Agama stellio*), a Spiny-tailed Uromastix (*Uromastix acanthinurus*) from North Africa, a Mailed Uromastix (*Uromastix loricatus*) from Persia, deposited.

OUR ASTRONOMICAL COLUMN.

COMET 1903 *b*.—From observations made at Windsor, N.S.W., on April 26, 29, and May 1, and communicated by telegraph to the Kiel Centralstelle, Herren M. Ebell and H. Kreutz have calculated the following elements and ephemeris for the comet discovered by Mr. Grigg on April 17:—

Elements.

T = 1903 *March* 25·5486 *Berlin M.T.*

$$\left.\begin{array}{r@{\,=\,}l}\omega & 186^\circ\ 40'\cdot7\\ \Omega & 213\ \ 14\cdot5\\ i & 66\ \ 29\ 6\end{array}\right\}1903\cdot0.$$

$$\log q = 9\cdot71054.$$

Ephemeris for 12*h*. *M.T. Berlin.*

1903.	α h. m. s.	δ ° ′	log Δ	Brightness.
May 13	5 36 33	−22 2·8	0·1668	0·51
17	5 57 59	−22 53·9	0·1779	0·43
21	6 18 40	−23 34·9	0·1905	0·37
25	6 38 34	−24 7·2	0·2042	0·31
29	6 57 34	−24 32·2	0·2190	0·27
June 2	7 15 40	−24 51·2	0·2345	0·23

The brightness at time of discovery is taken as unity (*Kiel Circular*, No. 59).

A REMARKABLE ALGOL VARIABLE.—Prof. E. C. Pickering, writing to the *Astronomische Nachrichten*, No. 3866, states that the new Algol variable, 4.1903 Draconis, discovered by Madame Ceraski, is of unusual interest on account of its short period and great range of variability.

An examination of the plates obtained with the Draper telescopes shows that the period is 1d. 8h. 34·7m., and the range of variability 2·4 magnitudes. About half an hour before minimum the brightness decreases at the rate of between 2 and 3 magnitudes per hour, a rate probably greater than any other hitherto discovered. A minimum was predicted and observed at Harvard on March 19 at 16h. 24m. G.M.T.

NEW VALUE FOR THE SOLAR PARALLAX.—In view of the probable publication, in the near future, of the results obtained from observations of Eros, Herr B. Weinberg, of the University of Odessa, has collected about 130 of the more trustworthy values for the solar parallax as obtained by different observers, using various methods, since 1825, and has discussed them in a paper communicated to No. 3866 of the *Astronomische Nachrichten*. From the discussion he has obtained

$$8''\cdot8004 \pm 0''\cdot00243$$

as his final value for this constant.

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INSTRUCTIONS TO OBSERVERS OF THE SUN.—In the April issue of the *Bulletin de la Société astronomique de France* an abstract is given of the first chapter of "Instructions pour l'Observation du Soleil," which will be issued to anyone desirous of systematically recording solar phenomena by the "commission solaire." The instructions give detailed and valuable suggestions on the observation and recording of the positions, size, nature and general details of sun-spots and faculæ, and also suggest the atmospheric conditions which should be recorded concurrently.

The object of the commission is to induce a large number of amateur astronomers, possessing instruments not exceeding 10 cm. in aperture, to participate in the collection of a large quantity of material for the discussion of the eleven-year period of solar variations.

STONYHURST COLLEGE OBSERVATORY REPORT FOR 1902.—This report contains a large amount of useful and detailed information and data as to the observations of meteorological and magnetical phenomena made at the Stonyhurst and St. Ignatius (Malta) Colleges during 1902, together with a report and some notes by Father Sidgreaves.

The sun was observed, at Stonyhurst, on 217 days, and on 110 days drawings of the solar surface were made. The spotted area of the sun observed during 1902 shows a return of solar activity, the figures (unity representing one-five-thousandth of the visible disc) for 1900, 1901, and 1902 being 0·55, 0·29, and 0·33 respectively.

Owing to unfavourable meteorological conditions the stellar spectrographic work was not very fruitful during 1902, but 44 good spectrographs of β Lyræ were obtained, and, as soon as circumstances permit, the results of an investigation of the spectrum of this star will be published.

OPENING OF THE JOHNSTON LABORATORIES FOR MEDICAL RESEARCH IN THE UNIVERSITY COLLEGE, LIVERPOOL.

A WORKING alliance between the forces of science and commerce is a condition of things that has of late been the prayer of many well-wishers to both. It is a happy union which, as we are often told with perfect truth, obtains less in this country than in many others. But in notable degree an exception must be made among our own communities in the case of Liverpool. The opening ceremony performed in Liverpool on Saturday last for the inauguration of the William Johnston Laboratories of the University College exemplified in a remarkable and memorable manner the strength of what is already in fact, and will in a few weeks also be in name, a university of municipal type.

Mr. William Johnston, shipowner, of Liverpool, last year munificently endowed a chair for biochemistry at the College, and also three fellowships for research in physiology, pathology and gynæcology. He has enhanced his splendid and far-sighted gift by now providing a large and well-equipped building for the laboratory purposes, not only of biochemistry, but of tropical medicine, experimental medicine, and comparative pathology. The large block housing these four subjects is built so as to adjoin, and have free internal communication with, the laboratories of physiology and pathology erected five years ago by the Rev. Thompson-Yates. These Johnston Laboratories form a building 90 feet long by from 35 feet to 50 feet wide. They constitute four floors in the entire block, each floor devoted to one separate department of research. It is noteworthy that in this building we find a university building in which there is not a single class-room or lecture-room in the ordinary sense of those words. From basement to roof it is devoted absolutely and exclusively to purposes of research. Tropical medicine is housed in the ground-floor, and is under the direction of Prof. Ronald Ross, F.R.S. The first floor is allotted to experimental medicine, under Dr. Albert Grünbaum, F.R.C.P., and a large proportion of its rooms are already occupied by cancer research. The second floor is entirely given to Prof. Moore's department of biochemistry, and its installation is nearly complete, two workers availing themselves of its equipment and facilities already. The basement, which is, in fact, only half-sunken and extremely well lighted, is entirely given to comparative pathology, under the direction of Dr. Annett.

The character of the arrangement of the fixtures and fittings of the laboratories deserves some notice. The leading idea has been to break up the internal space of the large area enclosed on each floor with the external walls as little as possible by permanent walls. The main floor is therefore cut up into compartments by wooden screens that do not reach the ceiling. These screens serve in many cases to carry, as walls, both shelves and cupboards, but they allow the twelve large windows to distribute light over every nook and corner of the whole. By this arrangement the laboratory is practically divided into bays, in which investigators can work separately, and surrounded on all sides by their working benches or shelves, and yet not obstructing the light of work going on elsewhere. A novel feature is that the floor of the rooms and the tops of the benches are made of polished *lito-silo*, a material which has resiliency, smoothness, and non-absorbent qualities, enabling it to be easily cleaned and disinfected. On all the floors there is a complete supply of water, gas, electric light, electric power, and steam. A lift, as well as a staircase, connects the floors together. The building is warmed by hot water and ventilated by the upper parts of the windows and by extraction shafts arranged down the centre of the rooms.

In the department of experimental medicine, some of the beautiful and costly apparatus provided has been furnished by the fund of 10,000*l.* recently given by Mr. Sutton Timmis for the prosecution of investigation into cancer. Dr. Albert Grünbaum, as the director of the cancer research, has already commenced experimental inquiries in this field on this floor of the laboratories. One of the rooms on the same floor is very fully equipped with electrical therapeutic apparatus of the most modern design.

The whole building forms a set of laboratories giving probably unsurpassed accommodation to the studies which it was raised to house. Certainly we have in the United Kingdom no other so fine laboratories of biochemistry or of tropical medicine. Their erection marks an era in the history of these studies in this country. That these subjects and other kindred direct extensions of physiology and pathology should now demand and obtain spacious accommodation is but one of the many indications that the trend of medical study, and therefore of medical education, has really entered upon a new route. The narrow and facile, but unfruitful and mentally circumscript ways of mere human anatomy are being exchanged for studies of more scientific character, and physical, chemical, zoological, or physiological in method and basis. This will demand, of course, better education in those entering the profession of medicine. It further inevitably connotes a closer association than at present between the art of medicine and pure science. Just as inevitably does it also presage an era probably even more fertile in achievements of biological study than that which we already couple with the names of Darwin and Pasteur.

The formal opening of the new laboratory was presided over by the Right Hon. Walter Long, President of the Local Government Board. A distinguished company attended. In addition to the staff and students of the University College, Mr. William Johnston, the donor, the Lord Mayor of the city, Mr. E. K. Muspratt, Sir John Brunner, Sir Alfred Jones, and many other well-known citizens were present. A large number of visitors, not only from various parts of the United Kingdom, but also from the Continent and America, had gathered to take part in the ceremony. Among these were Sir Michael Foster Profs. Clifford Allbutt, Armstrong, Halliburton, Schäfer Waller, Gotch, Stirling, Botazzi, Hausemann, Weigert Nocard, Grützner, Blanchard, Uhlworm, Eulenberg Perroncito, Delépine, Woodhead, Ravanel, Steegmann Lorrain Smith, Macdonald, W. H. Thompson, Trevelyan Drs. Rose Bradford, Monckton Copeman, Dawson Williams, Seaton, Bulstrode, and many others. In the evening Mr. William Johnston entertained a distinguished company to dinner at the Adelphi Hotel. The President of the Local Government Board, in the course of a vigorous speech on the necessity of progress being maintained in the advance of natural science by research in this country, declared that

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